S.C. Department of Health and Environmental Control

Point Source Data Report Workshop 2005 Inventory

DHEC
PROMOTE PROTECT PROSPER

Bureau of
Air Quality

Welcome

General Housekeeping:

- Facilities
- Canteen
- Nearby Restaurants
- Fire Drill

2005 PSDR…

Are we ready !?!? …

General Instructions

- Emissions Inventory and the Point Source Data Report
- Do I need to do a Point Source Data Report?
- Getting Started
- Filling Out the Point Source Data Report
- Performing Calculations
- Additional Reporting
  - Rule Effectiveness
  - Air Toxics
  - Ammonia and Condensable Organics
- Finishing Up

Emission Inventory and the Point Source Data Report

- Staff rely on EPA approved methodology
- Use preferred methods over less preferred methods
- BAQ incorporated all EIIP Preferred Methods Documents into our operating procedures
- EIIP Documents, AP-42 and other EPA estimating tools may be downloaded at: http:www.epa.gov//ttn/chief
- Staff will review facilities' calculations

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The $64,000 Question...??

Do I need to do a PSDR?

Do I need to do a PSDR?

- Title V Facilities will submit their Emissions Inventory on a schedule based on the amount of pollutants emitted
- Type A Sources-every year
  - SOx, NOx, CO ≥ 2500 tons/yr,
  - VOC, PM10, PM2.5, NH3 ≥ 250 ton/yr,
- Type B Sources-every 3 years beginning in 2006 for 2005 data
  - SOx, NOx, VOC, PM10, PM2.5,NH3 ≥ 100 ton/yr
  - CO ≥ 1000 ton/yr
  - Pb ≥ 5 ton/yr

Do a PSDR? – cont'd

- NAA Sources - every 3 years beginning in 2006 for 2005 data
  - Lower threshold than Type B Sources may apply based on non-attainment type
  - Only apply if an area is designated non-attainment for ozone, CO or PM10
- HAP Sources - every 3 years beginning in 2006 for 2005 data – HAP information only
- All other Title V facilities- initial Emission Inventory only
- Insignificant Activities will be required to be estimated once

Do a PSDR? – cont'd

- HAPs and TAPs for Type A Sources will be required at the Emissions Unit Equipment level every three years on the Type B Source schedule
- Major HAP sources who are not Type A or Type B Sources will be required to do a HAP summary every three years beginning in 2006 for 2005 data

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Getting Started

- Download the PSDR at: http://www.scdhec.net/eqc/baq/html/emissions_inventory.html
- Instructions are on the back of the preprinted forms
- Check pre-populated Facility General information and Document Certification pages
- Copy and complete as many Emissions Unit Equipment, Control Device or Stack pages as needed
- To determine correct units for activities reported
  - Download the most current version of FIRE software: http://www.epa.gov/ttn/chief/software/index.html
  - "Chapter 14:Uncontrolled Emission Factor Listing Criteria Air Pollutants" http://www.epa.gov/ttnchie1/eiip/techreport/volume02/ii14_july2001.pdf
- Confidential Copy/Public Copy

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Filling Out the Point Source Data Report

- **Facility Information Page**
- Emission Unit Equipment Pages
  - Fuel Burning Emission Unit Equipment
  - Evaporative Loss Emission Unit Equipment
  - Miscellaneous Emission Unit Equipment
  - Incineration Emission Unit Equipment
  - Storage Tank Emission Unit Equipment
- Control Device Information
- Stack Information
- Insignificant Activities
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Facility General

- Facility general information is requested on this page
  - Emission Inventory Contact
  - Mailing Address
  - Billing Mailing Address
- 2005 Facility General Information Page

Filling Out the Point Source Data Report

- Facility Information Page
- **Emission Unit Equipment Pages**
  - Fuel Burning Emission Unit Equipment
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Emission Unit Equipment Page

- Reported in terms of your current permit
- A single Emission Unit Equipment ID may require more than one page to accurately report emissions generating activities
- Some equipment's emissions are very small (less than a ton for criteria pollutants, less than 200 lbs for HAPs/TAPs as described below) and may be summarized

Filling Out the Point Source Data Report

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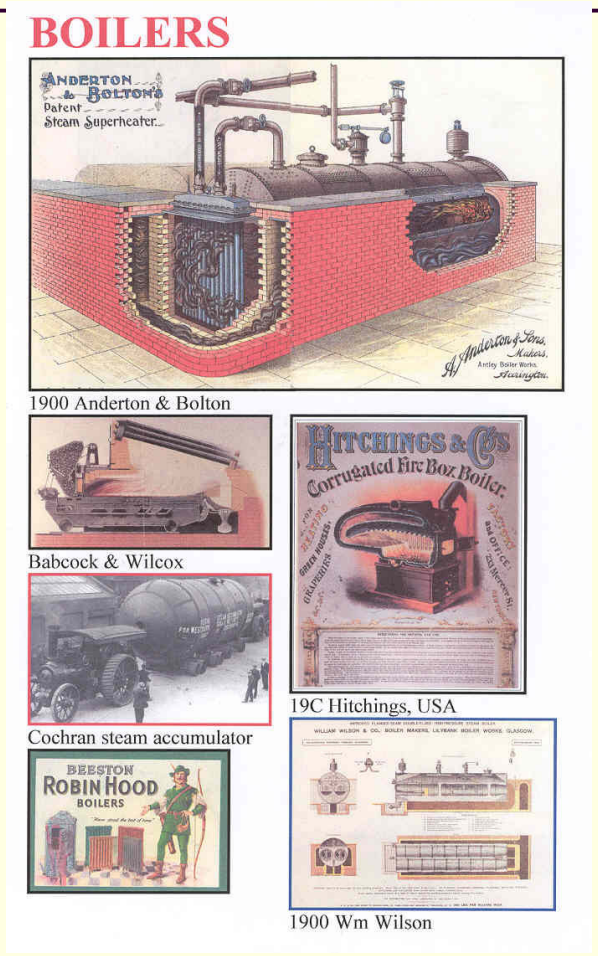
Information for Fuel Combustion

- Report fuel use in terms of thousands of gallons for liquid fuels, millions of cubic feet for natural gas, and tons for solid fuels.
- Use % sulfur for all fuels except natural gas, propane and butane. For propane and butane, the units needed are grains/100 cubic feet of gas vapor. Leave blank for natural gas. Please indicate units.
- For coal, designate: pulv. dry bottom; pulv. wet bottom; cyclone; spreader stoker; overfired stoker; or underfired stoker. Also, indicate whether the boiler is tangentially or wall fired.
- For internal combustion engines, designate: turbine; reciprocating; or other (describe); otherwise leave blank.
- Other useful info: controls such as low NOx burner, equipped w/ CEMs, heat content (BTU value) of fuel – otherwise use App A in AP-42
- Spell out units for clarity
  - Ex. mm CF vs. m CF, K gallons vs m gallons vs 1000 gallons

Fuel Burning



- Fuel Burning Emission Unit Equipment Page
- Sample Equipment Description Page
- One page for each significant fuel-burning source
- Summarizing fuel use
  - Stay within the Unit ID
  - Insignificant Activities

Filling Out the Point Source Data Report

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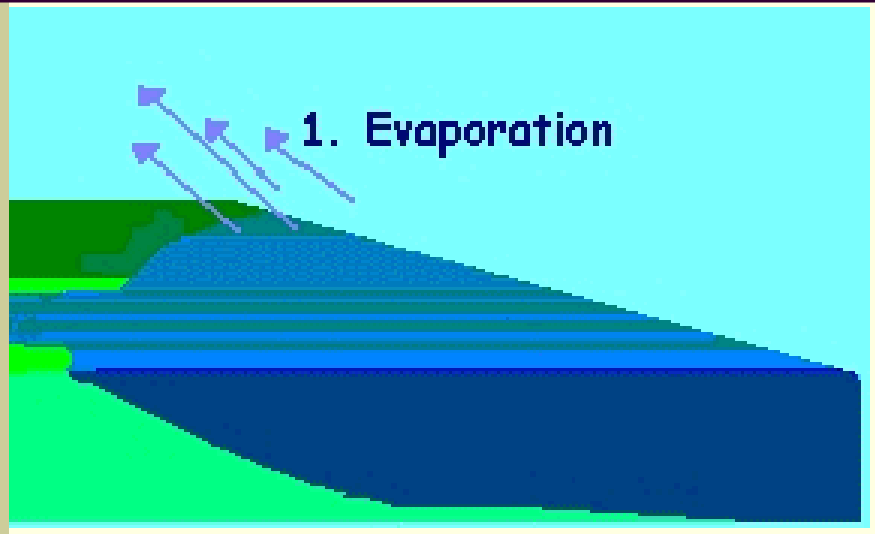
Evaporative Loss



- Calculate emissions using the material balance method
- Include HAP and TAP VOC emission estimates and be sure to include those emissions in the total VOC estimate for that ID
- Spreadsheets
- Evaporative Loss Emission Unit Equipment Page

Filling Out the Point Source Data Report

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Miscellaneous Emission Units

- Used for Industrial Processes which are generally listed in source classification codes 30100101-39999999 in the document
- Chapter 14
- FIRE
- Spreadsheets
- Miscellaneous Emission Unit Equipment Page

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Incineration

- Classification codes 50100101-50390010 in the document “Chapter 14: Uncontrolled Emission Factor Listing for Criteria Air Pollutants” to help determine incinerator type and correct reporting units.
- Spreadsheets may be used.
- Incinerators which are control devices should be reported on a Control Device page.
- Incineration Emissions Unit Equipment

Additional Equipment Info.

- Landfill Calculations
  - Use LandGEM model and formulas in AP-42 Ch. 2.4
  - http://www.epa.gov/ttn/catc/products.html#software
- Wastewater Calculations
  - Use Water9 model
  - http://www.epa.gov/ttn/chief/software/water/index.html

Filling Out the Point Source Data Report

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Storage Tank Emission Unit Equipment

- When is detailed storage tank information needed?
  - Tank's capacity is greater than 38.7 cubic meters (10,000 gallons), *or*
  - Stores a hazardous air pollutant, *or*
  - Emits one or more HAPs
- Detailed storage tank information is not needed for:
  - Pressurized storage tanks containing fluids such as liquid petroleum gas (LPG), liquid natural gas (LNG), natural gas, or inert gases

TANKS 4.09D

- Tank losses should be reported using TANKS 4.09D
  - Windows-based computer program that estimates VOC and HAP emissions from fixed- and floating-roof storage tanks.
  - Is based on the emission estimation procedures from Chapter 7 of EPA's AP-42.
- Can be downloaded from EPA's web page: http://www.epa.gov/ttn/chief/software/tanks/index.html
  - EPA / TANKS Helpdesk phone number: (919) 541-1000
- Send a copy of the TANKS Summary Report (~3 pages)

Filling Out the Point Source Data Report

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Control Devices

- Control devices will be tracked separately from their associated Emission Unit Equipment and stacks
- This page will also facilitate more complete reporting of Rule Effectiveness periods
- A spreadsheet can be used in lieu of this page to represent the control devices at your facility as long as the spreadsheet contains the information requested on this page.
- Control Device Information Page
- Fuel use in a control device should be reported separately on a Fuel Burning form.

Filling Out the Point Source Data Report

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- **Stack Information**
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Stack Information

- Complete a Stack Information page for each significant emission source
- This information helps determine the emission flow from origin to discharge into the atmosphere
- Stack Information Page

Filling Out the Point Source Data Report

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- **Insignificant Activities**
- Check List

Insignificant Activities

- Where can they be found?
  - Identified on your Title V Permit
- When to report?
  - Only need to be reported in initial Emissions Inventory
  - If not previously reported, need to report on this PSDR

Filling Out the Point Source Data Report

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- **Check List**

Check List

- This page is optional. It is included to aid inventory preparers to ensure all Emission Unit Equipment, Stacks, and Control devices have been reported. It can be useful to large facilities with many pieces of Emission Unit Equipment
- Check List Page

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Performing Calculations

- Even when performing calculations, you still need to complete a PSDR
- When preparing to perform calculations, it is helpful to have a copy of the most recent Detailed Emissions Inventory Report (DEIR) prepared by the Bureau and any supplemental sheets supplied with this report.
  - If you do not have a copy, please contact us and we will provide you with one
  - Sample DEIR - Summary
  - Sample DEIR - Detailed

Performing Calculations - cont'd

- Rule effectiveness adjustments need to be made to all calculations when control equipment did not operate as designed
- Emission estimates are required for all regulated air pollutants, including but not limited to, criteria, 112R, HAP, and TAP pollutants
- Include any regulated pollutants missed in past inventories in your calculations

Performing Calculations - cont'd

- AP-42, FIRE and other EPA emission estimating tools can be downloaded from the CHIEF web page at http://www.epa.gov/ttn/chief
- Staff relies on EPA-approved methodology and uses preferred methods over less preferred methods when performing or accepting calculations
- The order of preferred methods from best to least desirable are:
  - Mass balance calculations
  - Continuous emissions monitor data
  - Bureau approved and reviewed stack test emission factors
  - AP-42 or FIRE Emission factors
  - In-house stack test
  - Other

Performing Calculations - cont'd

- When calculating emissions, it will be helpful to review your facility's most recent Detailed Emissions Inventory Report (DEIR) prepared by the Bureau and any supplemental sheets supplied with this report
- Emissions should be calculated using the same methodology as presented in these documents
- The methodology used is indicated by the "method code" in the DEIR. For some "method codes" more detailed information can be found in the supplemental sheets

Method Code 9

- If this method code is indicated for a pollutant at the equipment ID level, the facility need not calculate its emissions. Our database will do this automatically using the appropriate process rate indicated on the DEIR and supplied by the facility in the PSDR
- Actual calculations need not be supplied with this “method code”

Method Code 1

- This method code indicates that emissions are based on a Bureau reviewed stack test. Emission factors derived from a stack test and used in the calculations should be based on the production rate during the stack test (i.e. lb/ton, lb/million BTU, etc.) and not a lb/hr factor
- Complete calculations must be supplied with the PSDR and the date of the source test being used must be indicated

Method Code 1 – cont'd

- Stack Tests are considered applicable for a source from the date of the stack test up until the day before the source is retested. The below two examples should help clarify this:

  Example 1: A facility calculating their 2005 emissions had a source test in 2003 and again on April 15, 2005. The emission calculations for January 1 through April 14 should be based on their 2003 test. The calculations for April 15 to the end of the year should be based on the April 15 test. These two sets of calculations are then added to get total emissions for the tested pollutant.

Method Code 1 – cont'd

- Example 2: A facility calculating their 2005 emissions had a source which tested in 2003 and again on February 15, 2005 and failed this second test. They did a retest on June 25, 2005 and passed this test. The emission calculations for January 1 through February 14 should be based on their 2003 test. The calculations for February 15 through June 24 should be based in the February 15 test. Finally, the calculations for June 25 to the end of the year should be based on the June 25 test. These three sets of calculations are then added to get total emissions for the tested pollutant

Method Code 1 – cont'd

- For Particulate Emissions:

  - We are interested in total particulate emissions. Calculations for particulate emissions using stack test data must take into account any condensable particulate factors found in AP-42 or FIRE. Since EPA Reference Method 5 only captures filterable particulate emissions you must add these filterable emissions to the condensable particulate emissions to get total particulate emissions.

  - If this was not done in the past, please correct our oversight.

  - When adding the condensable particulate emissions to the filterable particulate emissions, the proper method code to use is a "3".

Method Code 1 – cont'd

- For PM10 Emissions:

  - If an AP-42 factor is available for filterable PM10 emissions, the ratio of this factor to the AP-42 emission factor for filterable particulate matter can be used to estimate filterable PM10 emissions from tested emissions. Any AP-42 condensable particulate matter emissions will need to be added to the filterable PM10 emissions to get total PM10 emissions. (Condensable particulate matter emissions are all assumed to be less than 1 micron.)

  - A like scenario should be used to estimate PM2.5 emissions.

  - In both of these cases, the proper method code to use is a "3".

Method Code 1 – cont'd

- Test Calculator Tool Examples:

  Original

  Example 1

  Example 2

  Example 3

Method Code "M"

- This method code indicates that emissions are based on Continuous Emission Monitor (CEM) data
- This data should only be from a CEM that is Bureau certified
- Calculations and/or documentation of the annual emissions should be supplied

Method Code 4

- Emissions with this method code are so indicated because a better method for determining emissions could not be found
- Method code 4 is generally used only when there is no Bureau certified continuous emission monitor data, mass balance information, Bureau approved stack test, or AP-42 or FIRE emission factors available for estimating emissions
- Method code 4 emission estimates may be from in-house stack tests, the facility's Title V permit application, industry factors, etc. (Note: If an in-house stack test is used, the methodology for calculating emissions should follow that discussed for stack test previously)
- Complete calculations should be supplied with the PSDR

Other Method Codes

- Those emissions with any other Method Code should be calculated based on that Method Code
- Method Code definitions can be found at the bottom of the calculation pages of the DEIR
- Complete calculations should be supplied with the PSDR

Performing Calculations - cont'd

- The facility should calculate all regulated emissions for any equipment contained on the facility's most current operating permit not contained on the DEIR or any equipment that is not on the facility's permit or the DEIR. Calculations and/or documentation of the annual emissions should be supplied

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Rule Effectiveness

- The EPA has determined that control devices do not operate at their design capacity 100% of the time
- Traditional emission inventories underestimate actual emissions
- This causes problems because emissions control strategies for non-attainment areas depend on accurate emissions inventories.
  - If estimates are too high, modeling will indicate that more controls must be applied than are necessary to achieve attainment
  - If estimates are too low, then not enough controls will be required, resulting in continued non-attainment

Rule Effectiveness – cont'd

- EPA guidance requires that a correction factor, called RuleEffectiveness (RE), must be applied to the control device efficiency
- Default correction factor is 80%
- BAQ believes this 80% factor is too conservative
- BAQ is asking on the Control Device Page for information to be used in lieu of the 80% factor

Rule Effectiveness – cont'd

- Control Device Down Time
  - Control device downtime example

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Air Toxics

- Pollutants capable of causing serious illnesses (e.g., cancer, birth defects) or even death
- Health effects are typically irreversible
- Health effects generally associated with years of exposure rather than hours or days
- Some persist in the environment, either remaining in the air or depositing on soil and in waterways
- Toxic in small amounts

Identifying HAPs and TAPs

- Speciate all HAPs and TAPs used at the facility under the appropriate emission unit equipment
- Groups of compounds such as metal compounds, POMs, etc. should be broken into individual compounds, if possible
- If HAPs are not speciated, the EPA applies a “conservative” speciation profile when the emissions are entered into their models
- The CAS number should be included

Chemical Abstracts Service (CAS)

- EPA's List of HAPs
  http://www.epa.gov/ttn/atw/orig189.html
- NIST Chemistry Web Book
  http://webbook.nist.gov/chemistry/
- EPA's Substance Registry System
  http://www.epa.gov/srs/

37 HAPs of Primary Concern

- Report if you emit any of theses 37 HAPs at any level: HAPs Table
- All other HAPs and TAPs should be reported if the facility wide total of that HAP or TAP exceeds 200 lbs
- http://www.epa.gov/ttn/atw/orig189.html
- http://www.scdhec.gov/eqc/baq/regs/word/R61-62_5S8.doc
- All HAPs and TAPs being reported need to be reported at the Emission Unit Equipment ID Level

Problematic HAPs

- Polycyclic organic matter (POM) & naphthalene
- Dioxins and furans
- Metals
- Cyanide compounds
- Glycol Ethers
- Xylenes
- Cresols

Polycyclic Organic Matter

- Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100^0 C
- Examples include polycyclic aromatic hydrocarbons (PAHs), chrysene, benzo(a)pyrene, and naphthalene
- Naphthalene is unique in that it is listed as a separate HAP on the Federal HAP list
- Speciate, if possible

Dioxins and Furans

- Dibenzofurans and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) are listed on the Federal HAP list
- EPA inventories all dioxins and furans

Metals

- Antimony
- Arsenic
- Beryllium
- Cadmium
- Chromium
  - Hexavalent and trivalent
- Cobalt
- Lead
  - Organic and inorganic
- Manganese
- Mercury
  - Particulate, gaseous elemental, and gaseous divalent
- Nickel
  - Nickel subsulfide and other nickel compounds
- Selenium

Cyanide Compounds

- Hydrogen cyanide
- Zinc cyanide
- Potassium ferrocyanide

Glycol Ethers

- Includes monoethyl and diethyl ethers of ethylene glycol, diethylene glycol, and triethylene glycol
  - Polymers are excluded from the glycol category
  - Diethylene glycol is not a glycol ether and therefore not a HAP, but is a VOC
- Over 50 individual compounds in NEI pollutant code look up table
- North Carolina Department of Environment and Natural Resources

  http://daq.state.nc.us/toxics/glycol/

Xylenes and Cresols

- Xylenes: mixture of o-,m- and p- isomers
- Cresols: mixture of o-,m- and p- isomers, cresylic acid
- If known, report the specific isomer; otherwise, report as xylenes or cresols

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Ammonia and Condensable Organics

- Ammonia, condensable organics, and organic and elemental carbon are precursors to PM 2.5
- Report any Ammonia, PM 2.5 or its precursors
- Report condensable organics that are not captured on the Evaporative Loss Emission Units pages(s) in a separate attachment along with any applicable control device and stack data

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Finishing Up

- Compile all forms
- Sign Document Certification page where appropriate
- Answer question at the bottom of Document Certification Page
- Completed Point Source Data Reports should be mailed to:

Emission Inventory Section
Bureau of Air Quality
SC DHEC
2600 Bull Street
Columbia, SC 29201

- If you have any questions about completing this form, please call Carla Bedenbaugh (803) 898-4279 or Larry Bunn (803) 898-4301 of the Emission Inventory Section.
- Document Certification

Additional Links

- DHEC BAQ Web Page
  http://www.scdhec.gov/eqc/baq/html/index.html
- Emissions Inventory Web Page
  http://www.scdhec.gov/eqc/baq/html/emissions_inventory.html
- EPA Clearinghouse for Emissions Inventories and Factors (CHIEF)
  http://www.epa.gov/ttn/chief/ - AP-42, Source Classification Code (SCC) resource, TANKS Software, FIRE, and more

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2005 PSDR Workshop…

Thank You !!!